IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:

CHARLES WATKINSON

SERIAL NO.: 10/598,398 **ART UNIT: 1791**

FILED: DECEMBER 22, 2006 **EXAMINER: JODI F. COHEN**

TITLE: FORMATION OF GLASS FLAKES

APPEAL BRIEF

On December 2, 2009, Applicant, Appellant herein, timely appealed (including a *Petition for a Three-Month Extension of Time* for Response, pursuant to 37 C.F.R. §1.136(a), and requisite extension fee) from the rejection of Claims 5-9, as set forth in the final Office Action, dated June 2, 2009.

Appellant now proceeds to file his *Appeal Brief* with the Appeal Brief filing fee of $270.00 (small entity), as set forth in 37 C.F.R. §1.17(f), being remitted via EFT.

I. Real-Party in Interest

(37 C.F.R. §41.37(c)(1)(i))

The real-party-in-interest is Glassflake Ltd., Forster Street, Leeds, United Kingdom LS10 1PQ, by virtue of an Assignment of the entire right, title and interest in, and to, the above-identified patent application and the invention claimed therein from the inventor, Charles Watkinson. The Assignment was recorded December 22, 2006, at Reel No. 018673, Frame No. 0057.

II. Related Appeals and Interferences

(37 C.F.R. §41.37(c)(1)(ii))

There are no related appeals or interferences currently pending which may be related to, directly affect or be directly affected by, or have a bearing on, the Board's decision in the pending appeal.

III. Status of Claims

(37 C.F.R. §41.37(c)(1)(iii))

The instant patent application was filed as P.C.T. Application No. PCT/GB2004/-005457 on December 29, 2004, claiming priority from a patent application filed in the United Kingdom on December 30, 2003. The U.S. National Fee for entry of Appellant's P.C.T. Application was paid on August 26, 2006, along with a *Petition to Revive* the P.C.T. application with respect to the United States designation, and the requirements for entry of the P.C.T. application into the U.S. National Phase, pursuant to 35 U.S.C. §371, including the granting of the *Petition to Revive*, were completed on December 22, 2006. Appellant's patent application, claiming a "method for changing a particle thickness size distribution of flakes of material," such as may be used in the manufacture of glass flakes, therefore has an effective filing date of December 20, 2003.

The claims of Appellant's application were last amended on August 26, 2006. Claims 5-9 are pending, while Claims 1-4 have been cancelled. There are no claims that have been "withdrawn" from consideration, pursuant to either a restriction or election

requirement. The single independent claim pending is Claim 5, which recites a method for changing particle thickness size distribution of flakes of material, which may be, but is not limited to, the method for changing the particle thickness size distribution of glass flakes.

No amendments in reply to the final Office Action, issued June 2, 2009, have been filed.

Therefore, the status of the claims on appeal is:

Claims allowed: None

Claims objected to: None

Claims rejected: Claims 5-9

Claims cancelled: Claims 1-4

Claims withdrawn: None

IV. Status of Amendments

(37 C.F.R. §41.37(c)(1)(iv))

No amendments were filed subsequent to the final rejection, dated June 2, 2009, from which this appeal has been taken.

The claims presented to the Board for consideration on appeal are the claims, as last amended on August 26, 2006, as presented in the *Preliminary Amendment* filed on such date.

V. Summary of the Claimed Invention

(37 C.F.R. §41.37(c)(1)(v))

Independent Claim 5, which properly defines the invention to be considered by the Board on appeal, reads as follows:

5. A method for changing a particle thickness size distribution of flakes of material (*Appellant's Specification* at Page 3, lines 20-21), said flakes of material being formed by a process comprising the steps of:

feeding a stream of molten material in a downwards direction into a rotating cup or disc (*Appellant's Specification* at Page 3, lines 22-23);

allowing the stream of molten material to pass over an edge of the cup or the disc for forcing the stream of molten material into a gap between a pair of plates surrounding the cup or the disc (*Appellant's Specification* at Page 3, lines 23-25); and,

maintaining movement of the stream of molten material in an angular direction via a flow of air passing through the pair of plates and either side of the stream of molten material for pulling the stream of molten material, so that the stream of molten material is, and is kept, in a flattened state and, further, for pulling the stream of molten material so that, as solidification of the stream of molten material occurs, a sheet of solidified material is formed that brakes into said flakes of material (*Appellant's Specification* at Page 3, lines 25-29),

said method for changing the particle thickness size distribution of said flakes of material so formed, comprising the step of:

varying a distance between the cup, or the disc, and an entrance to the gap between the pair of plates until a desired particle thickness size distribution of said flakes of material is obtained (*Appellant's Specification* at Page 3, line 29 – Page 4, line 2; Page 6, lines 19-21; FIG. 2).

Appellant's invention, as most claimed, provides a method for the formation of glass flakes which allows for changing the particle thickness size distribution of the flakes of material being formed. (*Appellant's Specification* at Page 3, lines 20-21) More particularly, the glass flakes are formed by a process that includes the steps of feeding a stream of molten material in a downwards direction into a rotating cup or disc and allowing the material to pass over the edge of the cup or disc so that it is forced into a gap between a pair of plates surrounding the cup or disc. (*Appellant's Specification* at Page 3, lines 22-23) The movement of material in the process used for forming the flakes is maintained in an angular direction and effected by a flow of air passing through the plates and either side of the material, so as to pull the stream of material in a manner for keeping it flat and, further, to pull the stream of material so that, as solidification of the material is effected, the sheet of material so formed is broken into flakes. (*Appellant's Specification* at Page 3, lines 23-29)

In sharp contrast to the prior art, and as will be explained in greater detail, the presently claimed method includes the step of <u>varying the distance between the cup, or</u>

the disc, and the entrance to the gap between the plates until the desired particle thickness size distribution of the flakes is obtained. Although it was previously known that variation of the distance between the cup and the plates was one of many factors which could affect flake size (as explained in Appellant's *Specification* at Page 4), it was not recognized that varying this distance could have a profound effect on particle thickness size distribution, and it is this particular characteristic of a product that is fundamental to the quality thereof. (*Appellant's Specification* at Page 4, lines 13-20) Prior to the development of the present invention, it had been assumed that any significant increase of the cup-plate separation, beyond the median at which an acceptable product is obtained, would lead to a deterioration of the product and, in particular, its flatness and any such reduction simply reduced the nominal flake diameter. It was therefore surprising for the inventor to discover that the cup-plate separation can be substantially increased or decreased with a concomitant change in particle size distribution without any other reduction in the quality of the product, provided the nominal thickness difference is compensated for by one of the remaining parameters. (*Appellant's Specification* at Page 4, lines 13-20)

As will be explained in greater detail hereinafter, nowhere in the prior art is such a novel and efficient method for varying the particle size distribution of a flake product, such as glass flakes, which includes the step of varying the distance between the cup, or the disc, and the entrance to the gap between the pair of plates, until the desired particle thickness distribution of the flakes is obtained, either disclosed or suggested.

The patentability of dependent Claims 6-9 over the prior art are to stand or fall on the basis of the patentability of the independent claim (*i.e.*, Claim 5) from which such dependent claims depend.

VI. Ground of Rejection to be Reviewed on Appeal

(37 C.F.R. §41.37(c)(1)(vi))

The final Office Action, dated June 2, 2009, from which this appeal has been taken, provides two ground for rejection of independent Claim 5 (and all remaining claims via dependency) for review on this appeal:

A. Claims 5-9 have been rejected, pursuant to 35 U.S.C. §103(a), as being obvious over Watkinson, U.S. Patent No. 5,017,207; and,

B. Claim 5 has been rejected as obvious, pursuant to the non-statutory doctrine of obviousness-type double patenting, over Claim 9 of Watkinson, U.S. Patent No. 5,017,207, taken in view of P.C.T. Publication No. WO 88/08412.

VII. Argument

(37 C.F.R. §41.37(c)(1)(vii))

A. Claims 5-9 Are Not Obvious over Watkinson, U.S. Patent No. 5,017,207

In the final Office Action, issued June 2, 2009, the Examiner has rejected pending Claims 5-9 as being obvious, pursuant to 35 U.S.C. §103(a), over Watkinson *et al.*, U.S. Patent No. 5,017,207, on the contention that Watkinson *et al.* discloses a method for

changing the size and thickness of glass flakes produced by a method, which includes the steps of feeding molten glass in a downward direction to a rotating cup and allowing the stream to flow over the edge of the cup and into a gap and in an angular direction via air flow between two plates. The Examiner has contended that the thickness of the flakes produced can be changed by the step of adjusting the flow of glass into the rotating cup, the speed of rotation of the cup, the distance between the annular extraction plates, as well as other parameters of the process. The Examiner has, however, conceded that Watkinson *et al.* does not explicitly disclose adjusting the distance between the rotating cup and an entrance to the gap between the pair of plates for achieving the desired thickness. Instead, the Examiner's stated position is that Watkinson *et al.* discloses varying "many parameters" and, hence, it would have been obvious "to try" varying the distance between the cup and the entrance gap in an attempt to vary the distance the material flows after leaving the rotating cut for achieving a desired particle thickness distribution of glass flakes. The Examiner has also contended that "[v]arying the diameter of the plate would adjust the distance over which the molten material flows after it has flowed out of the cup."

In reply to the Examiner's obviousness rejection of Claims 5-9 applying Watkinson *et al.* '207, Appellant respectfully states that, for many applications of glass flakes, it is important that the flakes have as narrow a thickness range as possible. The method and related apparatus for forming glass flakes that is explained in the applied citation of Watkinson *et al.* was developed in the mid-1980's, a time when it was appreciated that various parameters of the method and apparatus utilized therewith could be altered to

affect the glass flake material being produced, and the Examiner has pointed this out in the issued obviousness rejection. The variables exemplified by the prior art include the volume of the molten stream entering the rotating cup, the temperature of the material, the speed of the centrifuge cup, the diameter of the centrifuge cup, the gap between the pair of plates, the distance between the cup and the exit from the pair of plates and the airflow out of the chamber. (*See*, Watkinson *et al.* at Col. 2, lines 7-46)

It should, however, be noted, as the Examiner would appear to agree, that there is no disclosure or suggestion in Watkinson *et al.* of varying the distance between the rotating cup and the entrance to the gap between the pair of plates. Likewise, the applied reference fails to teach or suggest anything relating to the distribution of particle thick-ness to the extent to which the thickness of the particles may vary, rather than their average thickness or the size of the glass flakes produced. To the extent that "thickness" is discussed by the prior art, it is in connection with "size" and is clearly as a reference to average thickness or average size, for which only three parameters are suggested. (*See*, Watkinson *et al.* at Col. 2, lines 7-10: "By suitable choice of speed of rotation of the cup, the distance between the two plates and choice of air flow through the vacuum chamber, the size and thickness of the flakes of material to be produced can be controlled.")

Accordingly, Watkinson *et al.* not only does not mention the parameter which is of critical importance to the present invention, but also fails to discuss the use of any parameters – or the variation thereof – to effect thickness distribution, rather than average size or average thickness. Indeed, the apparatus described by the applied Watkinson *et al.*

reference was operated by Applicant for many years before the discovery was made that a selected, new parameter, *i.e.*, the distance between the cup and the entrance to the pair of plates, can be varied for controlling the thickness distribution of the glass flakes produced. The discovery, made at least fifteen years after the invention of the basic apparatus, and over a period during which considerable experimentation was undertaken, was, and is, regarded as a breakthrough in the achievement of a method able to produce a relatively narrow thickness distribution.

Accompanying this *Appeal Brief* is a diagram (presented in the "Evidence Appendix"), similar to that of FIG. 1 of Appellant's *Specification*, but illustrating, perhaps more clearly, just how effective varying the distance between the rotating cup and the entrance to the plates (referred to as "Venturi" in the diagram) is in controlling the thickness distribution of the glass flakes produced. More particularly, in the example shown in the diagram, reducing the distance from 500 units via 200 units, to 100 units, it is possible to narrow the distribution of 60% of flake thickness from 327 Mn via 263 Mn, to 110 Mn. The effect, as exemplified by the accompanying diagram, is respectfully submitted to be unexpected – unpredictable – and in no manner suggested by the applied Watkinson *et al.* patent reference.

It is, therefore, respectfully submitted that Appellant's invention, as most broadly recited in independent Claim 5, as currently of record, cannot reasonably be viewed as being obvious over Watkinson *et al.*, U.S. Patent No. 5,017,207, and it is therefore requested that the Examiner's 35 U.S.C. §103(a) obviousness rejection of the final Office

Action should be appropriately reversed.

B. Claim 5 is Not Obvious, Pursuant to the Doctrine of Obviousness-Type Double patenting, over Claim 9 of Watkinson, U.S. Patent No. 5,017,207, Taken in View of P.C.T. Publication No. WO 88/08412

Separately, as part of the final Office Action, dated June 2, 2009, the Examiner has rejected independent Claim 5 as being obvious, over Claim 9 of Watkinson *et al.*, U.S. Patent No. 5,017,207, taken in view of Watkinson *et al.*, P.C.T. Application Publication No. WO 88/08412, pursuant to the non-statutory doctrine of obviousness-type double patenting. As part of this obviousness rejection, the Examiner has again acknowledged that Watkinson *et al.* '207 fails to teach "varying a distance between the cup, or the disc, and an entrance to the gap between the pair of plates to obtain a desired particle thickness." The Examiner has secondarily-applied Watkinson *et al.* '412 for seeking to establish that it would be readily apparent to the skilled artisan as to how various parameters may be varied for producing glass flakes of a required size and thickness, thereby rendering Appellant's pending independent Claim 5 as obvious over Claim 9 of Watkinson *et al.* ' 207.

Procedurally addressing the Examiner's obviousness-type double patenting rejection of independent Claim 5, both Watkinson *et al.* '207 and Watkinson *et al.* '412 are "statutory" prior art under 35 U.S.C. §102(b) and, as such, issuance of an obviousness rejection under the non-statutory doctrine of obviousness-type double patenting would appear to be inappropriate. Consequently, the entirety of the disclosures of each of the applied references, as opposed to simply the claims of the issued United States patent, are

properly citable as "prior" art. Further, Watkinson *et al.*, U.S. Patent No. 5,017,207, represents the U.S. National Phase, pursuant to 35 U.S.C. §371, of Watkinson *et al.*, P.C.T. Application Publication No. WO 88/08412, and, consequently, both the applied U.S. patent reference and the related published P.C.T. international application are one and the same and necessarily have the same disclosures.

Accordingly, because both Watkinson *et al.* '207 and Watkinson *et al.* '412 have identical discloses and are fully citable for all which they disclose and suggest, it is respectfully submitted that the obviousness-type double patenting rejection of independent Claim 5 is the legal equivalent of the statutory obviousness rejection, issued under 35 U.S.C. §103(a), which applies solely Watkinson *et al.* '207 against pending Claims 5-9. If Claims 5-9 are patentably distinct over Watkinson *et al.* '207, it necessarily follows that independent Claim 5 must be patentable over the combination of the "two" identical references for the reasons presented by Appellant in reply to the 35 U.S.C. §103(a) obviousness rejection of Claims 5-9, which applies solely Watkinson, U.S. Patent No. 5,017,207.

Consequently, it is respectfully contended that Appellant's invention, as recited in independent Claim 5, cannot reasonably be viewed as being obvious over Watkinson *et al.*, U.S. Patent No. 5,017,207, taken in view of Watkinson *et al.*, P.C.T. Application Publication No. WO 88/08412 – which are references of identical disclosures – under the non-statutory doctrine of obviousness-type double patenting, and it is therefore respectfully requested that the Examiner's obviousness-type double patenting rejection of inde-

pendent Claim 5 be reversed.

Reversal of the Examiner's rejection, as presented in the final Office Action, dated June 2, 2009, is therefore respectfully requested and earnestly solicited to be proper.

Respectfully submitted,

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Enc.: 1. *Claims Appendix*, pursuant to 37 C.F.R. 37 C.F.R. §41.37(c)(1)(viii);

2. *Evidence Appendix*, pursuant to 37 C.F.R. §41.37(c)(1)(ix);

3. *Related Proceedings Appendix*, pursuant to 37 C.F.R. §41.37(1)(x); and,

4. An EFT for $270.00 - Appeal Brief Fee (small entity), pursuant to 37 C.F.R. §1.17(f).

The Commissioner for Patents is hereby authorized to charge the Deposit Account of Appellant's Attorney (*Account No. 19-0450*) for any fees or costs pertaining to the prosecution of the above-identified patent application, but which have not otherwise been provided for.

Claims Appendix

(37 C.F.R. §41.37(c)(1)(viii))

Claims 1-4 (canceled)

5. A method for changing a particle thickness size distribution of flakes of material, said flakes of material being formed by a process comprising the steps of:

feeding a stream of molten material in a downwards direction into a rotating cup or disc;

allowing the stream of molten material to pass over an edge of the cup or the disc for forcing the stream of molten material into a gap between a pair of plates surrounding the cup or the disc; and,

maintaining movement of the stream of molten material in an angular direction via a flow of air passing through the pair of plates and either side of the stream of molten material for pulling the stream of molten material, so that the stream of molten material is, and is kept, in a flattened state and, further, for pulling the stream of molten material so that, as solidification of the stream of molten material occurs, a sheet of solidified material is formed that brakes into said flakes of material,

said method for changing the particle thickness size distribution of said flakes of material so formed, comprising the step of:

varying a distance between the cup, or the disc, and an entrance to the gap between the pair of plates until a desired particle thickness size distribution of said flakes

of material is obtained.

6. The method for changing a particle thickness size distribution of flakes of material according to Claim 5, wherein said distance between the cup, or the disc, and the entrance to the gap between the pair of plates is variable by up to 1,500% from a minimum separation of the pair of plates.

7. The method for changing a particle thickness size distribution of flakes of material according to Claim 5, wherein the particle thickness size distribution achievable by varying said distance between the cup, or the disc, and the pair of plates is in a range of from 10% to 95%.

8. The method for changing a particle thickness size distribution of flakes of material according to Claim 5, wherein said distance between the cup, or the disc, and the pair of plates results in the particle thickness size distribution being in a range of 700 to 900 nanometers when said distance is set at approximately 100 units.

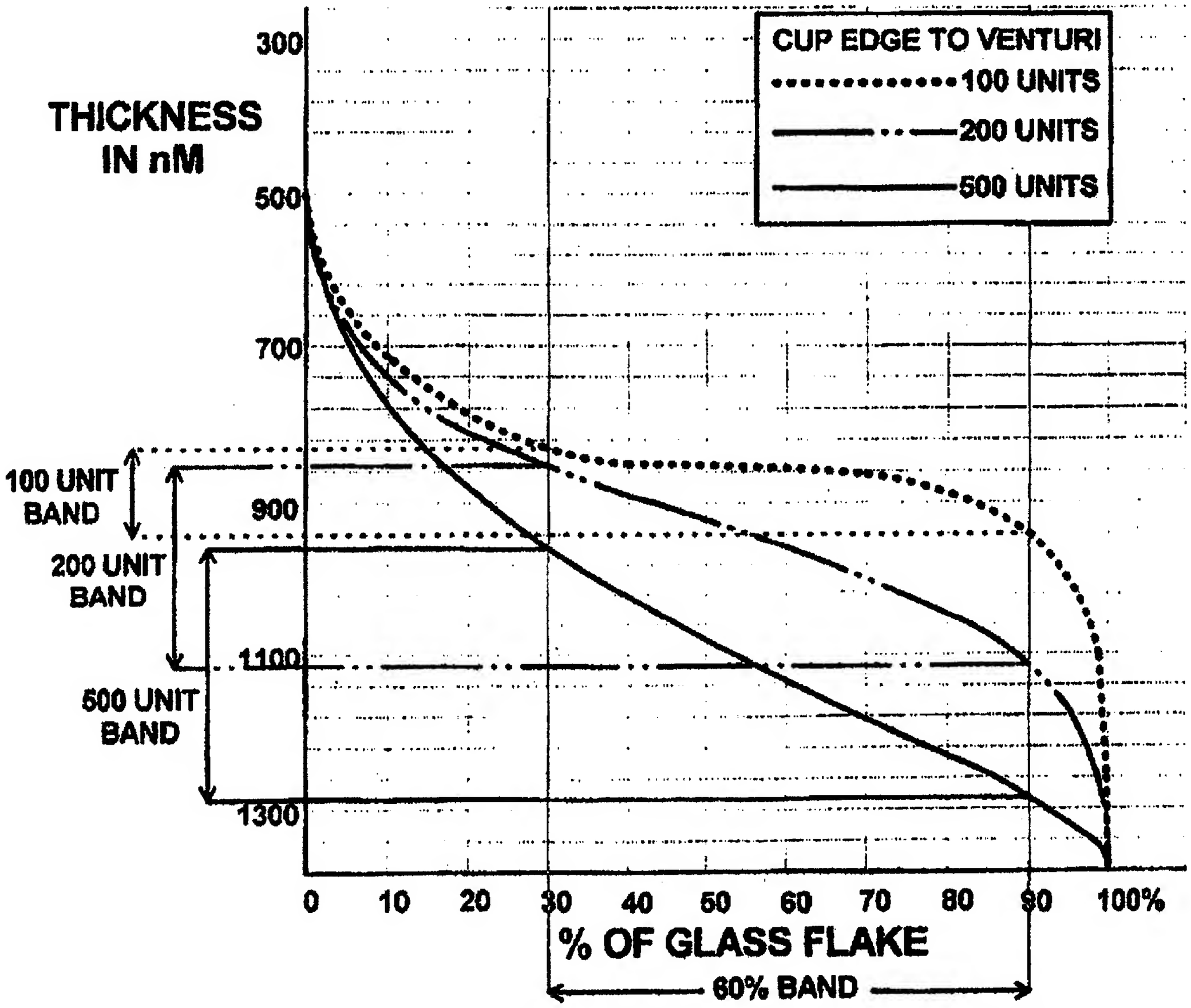
9. The method for changing a particle thickness size distribution of flakes of material according to Claim 5, wherein said distance between the cup, or the disc, and the pair of plates results in the particle thickness size distribution being in a range of 700 to 1,300 nanometers when said distance is set at approximately 500 units.

Evidence Appendix

(37 C.F.R. §41.37(c)(1)(ix))

Chart/graph entitled "A Means of Effecting Particle Size Distribution in Glass Flake Production" (next page of this *Appeal Brief*), originally filed as part of Applicant's *Response to the First Office Action* on February 19, 2009.

A MEANS OF EFFECTING PARTICLE SIZE DISTRIBUTION IN GLASS FLAKE PRODUCTION



60% Band @ 100 units, thickness distribution 830nM - 940nM, distribution width 110nM.
60% Band @ 200 units, thickness distribution 852nM - 1115nM, distribution width 263nM.
60% Band @ 500 units, thickness distribution 958nM - 1285nM, distridution width 327nM.

Related Proceedings Appendix

(37 C.F.R. §41.37(c)(1)(x))

None.